

CLASSIFICATION SECRET **SECRET**  
CENTRAL INTELLIGENCE AGENCY  
INFORMATION FROM  
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT

50X1-HUM

CD NO.

COUNTRY USSR  
SUBJECT Scientific - Medicine - Veterinary medicine  
HOW PUBLISHED Monthly periodical  
WHERE PUBLISHED Moscow  
DATE PUBLISHED May 1949  
LANGUAGE Russian

DATE OF INFORMATION 1949

DATE DIST. 25 Aug 1950

NO. OF PAGES 7

SUPPLEMENT TO REPORT NO.

THIS DOCUMENT CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF ESPIONAGE ACT 50 U. S. C. 91 AND 92, AS AMENDED. ITS TRANSMISSION OR THE REVELATION OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW. REPRODUCTION OF THIS FORM IS PROHIBITED.

THIS IS UNEVALUATED INFORMATION

SOURCE Veterinariya, Vol XXVI, No 5, 1949

50X1-HUM

NATURAL RECOVERY OF SHEEP AFFLICTED WITH BRUCELLOSIS

I. R. Zamuriy,  
Cand Vet Sci

[Tables referred to are appended.]

In 1944 in his article "The Natural Recovery of Agricultural Animals from Brucellosis" Academician S. N. Vyshlesskiy summed up a much-discussed subject. He cited a number of works of scientists (Asion, Salvel'yev, Bessonov, Fishbeyn, Amelina, Efimova, and Nikolayev), who studied various aspects of this problem. Although experimental results differed, they arrived at the same conclusion, i.e., that the natural recovery of agricultural animals afflicted with brucellosis goes far beyond the limits of theoretical significance, becoming a practically important factor in the development of our animal husbandry.

S. N. Vyshlesskiy wrote, "It is clear that with the loss of the serological reaction (agglutination and complement fixation), and the dropping off of the agglutination titer, comes the gradual dying out of the infection, which leads to complete recovery and immunity."

"There is no doubt that in other animals 'natural recovery' from brucellosis plays an important part, but this problem has not yet been treated adequately."

Medical workers have demonstrated increased support of this conclusion. For example, in her monograph "Brucellosis" Kotlyarova acknowledged, although with reservations, that, "in sheep with brucellosis as well as in guinea pigs spontaneous cures take place, appearing in the overwhelming majority of cases at the end of the second year of the disease." In 1948, Academician Zdorovskiy also spoke out on behalf of natural recovery.

- 1 -

CLASSIFICATION			SECRET			<del>SECRET</del>		
STATE	<input checked="" type="checkbox"/> NAVY	<input checked="" type="checkbox"/> NSRB	DISTRIBUTION					
ARMY	<input checked="" type="checkbox"/> AIR	<input checked="" type="checkbox"/> FBI						

**SECRET**

SECRET

50X1-HUM

In the works of expeditions of VIEM (All-Union Institute of Experimental Medicine) which took place in 1933-35, Vershilov, Voskresenskiy, Tarasov, and others noted that frequently when sheep were slaughtered 3-4 months after the disease they were unable to make cultures of brucellosis either from the organs or the lymph nodes of the animals.

Ye. S. Orlov, in 1941, asserted that an eliminated serological reaction in sheep reappears in 4-10 months, and that bacteriological study of these sheep after slaughtering successfully established a generalized form of brucellosis. He made the deduction that, "We do not possess at present a method with which we can successfully distinguish between recovered animals and bacilli carriers and therefore, self-cure cannot be successfully utilized in a flock infected with brucellosis. Due to the relatively short period of utilization of sheep for production and breeding, and also, the great epidemiological significance of brucellosis in sheep, sheep with the disease should be expediently slaughtered."

The contradictory information in the literature concerning the problem of natural recovery of animals afflicted with brucellosis, and the problem of the number of days required for the development of reproductivity of the animals induced us to conduct tests for the purpose of studying the process of natural recovery in sheep and their loss of the serological reaction to brucellosis.

For our investigations we took test sheep which had positive allergic reactions for brucellosis. In December 1946, the admission of animals to the flock was discontinued, the sheep were kept isolated, and our systematic investigation was established.

The first study was made for the lambing period of 1947. There were 1,000 sheep in the tested flock at this time and among them were six cases of abortus. However, we were unable to make brucellosis cultures from the fetuses of the aborted wombs, and the aborting sheep gave negative serological and allergic reactions.

In October 1947, the remaining [sic] 800 test sheep were tested for brucellosis by the seroallergic method. The results are shown in Table 1.

For more detailed study of the state of the allergy and agglutination reactions and their concurrence we produced the data arranged in Table 2.

From this data we see that 89 percent of the sheep formerly having brucellosis lose the seroallergic reaction after 1-1.5 years of isolation.

If we take into consideration that the test flock is replenished in time only by animals with positive allergic reactions, on the basis of the indications of Table 2, we can conclude that the allergic conditions of animals with brucellosis disappears just as fast as the agglutinins.

Along with the study of these reactions the flock was checked selectively by the complement fixation reaction. Of 363 sheep tested by this method, 171 or 47.1 percent reacted positively.

In comparing the concurrence of these reactions we produced the data shown in Table 3. From this table we see that 50 percent of the sheep lost all three reactions.

Lambs from the test sheep were left with their mothers until they were weaned, that is, until August, 1947. After weaning, they were checked for brucellosis by the allergy method and on recurrence of negative results they were placed in a separate flock which was isolated from the adult one. At the end of October of the same year this flock of lambs numbering 604 was tested for brucellosis by the three reactions. The results of these tests are arranged in Table 4.

- 2 -

SECRET

**SECRET**

**SECRET**

SECRET

50X1-HUM

Thus, 11 percent of the lambs from mothers with brucellosis reacted positively for brucellosis by the complement fixation reaction. All the lambs reacting positively were left in our flock for further study of the complement fixation reaction and in order to establish the danger of their presence for the lambs which did not react positively for brucellosis.

It can be assumed that in time either the number of lambs reacting positively increases or else, analogously to the adults, they lose the complement fixation reaction. This served to prolong the investigation both of the adult stock and of the lambs born in 1947.

Further study of the animals was conducted in July 1948. At this time there were 389 mothers remaining in the flock of adult sheep and there were no abortions due to brucellosis during the spring lambing of 1948.

The number of animals showing a positive reaction for brucellosis at that time is shown in Table 5.

Comparing this table with the earlier ones, we see that the serological indexes for brucellosis of the sheep in the test flock decreased sharply during the 2 years of isolation. In particular the percentage positively reacting to the agglutination test is greatly reduced. Obviously the animals first lose the agglutination reaction and then the allergy. In other words the allergic condition of the body is preserved longer than the agglutinins. It stands to reason that the quantitative indexes of the loss of the serological reactions without qualitative analysis cannot represent objective characteristics of the process of natural recovery of animals. Therefore, we conducted tests using the universal method of determining the pathological titer of the blood serum of the test sheep, as shown in Table 6.

The shift of the pathological titer of the serum toward disappearance or rather toward a point approaching the normal titer is more apparent in an analysis of the intensity of this reaction in each separate dilution.

For this purpose we used the regular method of fourfold evaluation as shown in Table 7.

Thus, the process of losing the agglutination reaction takes place gradually from the stronger tests to the weaker and from the fourfold tests to the single ones.

We noted that analogous effect occurred in the flock of lambs which were born in 1947 from mothers of the isolated brucellosis flock (see Table 8).

Thus, a possible increase in the number reacting positively for brucellosis among lambs born from mothers of the test flock was discounted. The percent of the lambs of this group reacting positively to brucellosis by the complement fixation reaction decreased sharply in comparison with the past year.

The order of the loss of the serological reaction by the animals is as follows: (a) first and earliest of all the agglutination reaction is lost, (b) then in most of them the allergic condition of the cells is lost, and (c) lastly the complement fixation reaction is lost. We regard this course of affairs as a logical sequence; the preceding state brings about the new state.

In the process of our investigations we formed the conviction that the Russian type of coarse wool sheep is more resistant to brucellosis, which is in complete agreement with many authors' opinions.

- 3 -

SECRET

**SECRET**

**SECRET**

SECRET

50X1-HUM

We also noted that this type of sheep loses more quickly the seroallergic reaction than the Prekos type, as shown in Table 9.

This data shows the superiority of the Russian type of sheep over the Prekos type as concerns infection by brucellosis and subsequent natural recovery.

By examining our experimental data from the point of view of the contemporary status of biological science, one can draw the conclusion that the environment of the animals plays a most important part in the fight against infection in general and against brucellosis in particular.

Our experimental data on the process of natural recovery of sheep from brucellosis are based on creating suitable living conditions for them, as follows:

1. The flock was isolated for 2 years without adding to it new sheep reacting positively to brucellosis.
2. The flock was kept in isolation, and rich pasture alternated with good sheep-fold feeding and watering.
3. Lambs born from mothers of the test flock after separation from their mothers were reared in isolation, kept in places free from brucellosis infection, and supplied with rich pasture.

These measures made it possible to stop the infection and to bring about a gradual loss of the reaction and dying out of the infection in this flock. After the slaughter of 11 of the test sheep which had lost the seroallergic reaction, we were unable to make brucellosis cultures either from the organs or the lymph nodes.

#### Conclusions

1. Sheep kept isolated for 2 years in an absolute majority of cases lost the agglutination and complement fixation reactions and also allergy for brucellosis. It may be assumed that these animals have practically recovered.
2. The lambs from mothers kept in an isolated flock were found to be healthy.

#### BIBLIOGRAPHY

1. "Veterinariya," No 11-12, 1944
2. Kotlyarova, "Brucellosis," Medgiz, 1947
3. Zdrodovskiy, "Brucellosis," Iz Ak Med Nauk SSSR, 1948
4. Orlov, Ye. S., "The Problem of Spontaneous Recovery of Sheep With Brucellosis," Vest Selkhoz Nauk, Veterinariya, No 2, 1941

- 4 -

SECRET

**SECRET**

**SECRET**

SECRET

50X1-HUM

Table 1

Data Pertaining to Seroallergic Tests on Flock With Brucellosis

(Agglutination reaction - RA)

Detected by

<u>No Tested</u>	<u>RA +</u>		<u>Allergy +</u>		<u>Concurrence of Reactions</u>		<u>General Index for Brucellosis</u>	
	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>
800	39	4.9	53	6.6	6	0.75	86	10.7

Table 2

Indexes of Concurrence of Reactions

<u>No Tested</u>	<u>%</u>	<u>RA + Allergy +</u>		<u>RA + Allergy -</u>		<u>RA - Allergy -</u>		<u>RA - Allergy +</u>	
		<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>
800	100	6	0.75	33	4	713	89.25	48	6

Table 3

Degree of Concurrence of Reaction of Agglutination

Allergy, and Complement Fixation (RSK)

<u>No Tested</u>	<u>RA + Allergy + RSK +</u>		<u>RA + Allergy + RSK -</u>		<u>RA + Allergy - RSK -</u>		<u>RA - Allergy - RSK -</u>		<u>RA + Allergy - RSK +</u>	
	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>
363	4	1	1	0.25	4	1	182	50	18	4.9

Table 4

October Investigation of Lambs from Mothers in Brucellosis Isolation

Detected byDetected by RSK

<u>No Tested</u>	<u>RA</u>		<u>Allergy</u>		<u>Tested by RSK</u>	<u>No</u>	
	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>		<u>No</u>	<u>%</u>
604	0	0	0	0	259	29	11

- 5 -

SECRET

**SECRET**

SECRET

50X1-HUM

Table 5

Data on Investigation of Test Flock in 1948

<u>Detected by</u>							<u>General Diagnostic Index</u>		
<u>RA+</u>		<u>Allergy+</u>		<u>RSK +</u>		<u>No of Concurrences</u>			
<u>No Tested</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	
389	5	1.3	22	5.6	47	12.1	without RSK 1	26	6.6
							with RSK 17	57	14.6

Table 6

Indexes of Blood Serum of Sheep With Brucellosis

<u>Year</u>	<u>1 : 25</u>		<u>1 : 50</u>		<u>1 : 100</u>		<u>1 : 200</u>	
	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>
1947	39	6.5	35	6	33	5.2	9	1.6
1948	17	4.4	5	1.3	4	1	1	0.3

Table 7

Intensity of Agglutination Reaction

				1 : 25 <u>of them</u>							1 : 50 <u>of them</u>		
<u>Year</u>	<u>No Posi- tively Reacting</u>						<u>No Posi- tively Reacting</u>						
1947	39	0	4	22	13		38	1	22	9		6	
1948	17	11	22	2	3		5	0	2	2		1	
				1 : 100 <u>of them</u>									
<u>Year</u>	<u>No Posi- tively Reacting</u>												
1947	33		19	12	1		1						
1948	5		3	1	0		1						

- 6 -

SECRET

SECRET

SECRET

SECRET

50X1-HUM

Table 8

## Data on Investigation of Lambs

<u>Year</u>	<u>No Tested</u>	<u>Detected by</u>					
		<u>RA</u>		<u>Allergy</u>		<u>RSK</u>	
		<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>
1947*	604	0	0	0	0	0	0
1948**	1,027	0	0	0	0	0	0

\*Tested only 259 by Complement Fixation Reaction

\*\*The flock was increased in January 1948 by the addition of lambs from healthy mothers.

Table 9

## Data on Loss of Reaction by Breeding Type

<u>Year</u>	<u>Breed of Sheep</u>	<u>Results of Testing by</u>					
		<u>RA</u>		<u>Allergy</u>		<u>Total Detected Allowing for Concurrences</u>	
		<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>	<u>No</u>	<u>%</u>
1947	Prekos	600	38	6.3	37	6.2	11
	Coarse Wool Russian	200	1	0.5	16	8.0	7.5
1948	Prekos	300	5	1.6	20	6.6	7.3
	Coarse Wool Russian	89	0	0.	2	2.2	2.2

- E N D -

- 7 -

SECRET

SECRET